HEATING & HOT WATER BOILER

OWNER'S MANUAL

Maxwell

Volcan Series

MGBWA070
MGBWA090
MGBWA0100

Important Safety Instructions

Dear customer:

Thank you for choosing "ENERGY" gas boiler,a wall hung boiler of the latest generation with elegant style and advanced technology.
L1PB series is a high-efficiency boiler for heating and domestic hot water production,running on natural gas, LPG or Artificial coal gas.
Thanks to the microprocessor control and adjustment system with advanced self-diagnosis,unit operation is for the most part automatic.The power for heating is automatically governed by the control system.The power for hot water is automatically and continually governed to ensure the fast delivery and comfort under all operating conditions.
All you need to do is just set the temperature of the room and set the desired outlet temperature for the hot water.The intelligent system will do it for you.
We hope you can enjoy the comfortable and safety experience our boiler brings you.

Warning

1. The gas pipeline of the device must be airproofing, only gas-pipe installation qualified company can do it.
2. If there is any defect in the installation of exhausted air discharging system, it will be possible for the exhaust regorging, incompletely burning or even CO toxicosis and explosion. When the flue is installed, please check it carefully and keep it position.
3. The device is with system release valve and tap water release valve. If the water pressure of system and water supply is exceeded, water will be discharged from the water releasing port. So a pipe needs to be installed to the port, in order to protect your living environment.
4. In the condition of freezing possible condition, if the device is not used or it can not be repaired in time, please discharge all the system water(there should be a water discharging valve in the lowest point of water pipe system)
5. If there is something wrong with the power supply cord, only the manufacturer, or after service department or some qualified technician can change it to avoid the danger occur.
6. This device should be installed with smallest service port.

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brief introduction

Two advantages

Heating comfortably

Adjusting the burning efficiency which makes the heating more comfortable. Apart from the radiator,Household air conditioning system and floor radiating heating system can match the boiler.

Excellent Domestic hot water Supply

13.5Kg/m water flow can meet your daily demand. Equipped with the latest intelligent temperature system ,the boiler could adjust the temperature of water even in frequent change of water pressure conditions and low pressure conditions.
Optional heat water tank can supply hot water for several rooms.

Main Features

Low noise, quick installation and easy operation.
Winter/Summer-mode Switch button, set the heating and domestic hot water temperature at your request.
Propotional switch can adjust the flame in order to control the temperature of heating system water and domestic water.
Temperature of water flow display,malfunction code display.

Safety valve will open automatically to release pressure to protect the the boiler from damage when the water pressure reaches to 0.3 Mpa.
Temperature extremes protection.The boiler will terminate the working program when overheated or a temperature sensor malfunction, occurs.
Negative-pressure hermetically firing Jess indoor oxygen consumption.
The boiler will stop working automately when the inlet tube and outlet tube is blocked. Only when malfunction is solved could the boiler be restarted. Ionization flame monitoring device will work to shut down the operation in case the ignition failure occurs at the beginning or during the process of combustion.
Freezing protection.If the temperature of water in heating system drops below 8 centigrade degree,the circulation pump will begin to work and will not stop until the temperature of water raises to 10 centigrade. When the temperature drops to 5 centigrade, the heating system will work until it reaches 30 centigrade. In certain conditions, the freezing protection function may be effected when the difference of temperature between surroundings and that of pipeline is overlarge.

Technical Parameter

HEATING SYSTEM

Model	MGBWA070	MGBWA090	MGBWA0100
Gas type	Natural gas, LPG, Artificial coal gas		
Rated input capacity (Btu/h)	70.000	90.000	100,00
Rated output capacity (Btu/h)	63.000	81.000	93.300
Min. input capacity for heating (Btu/h)	36.000	38.000	38.000
Min. output capacity for heating (Btu/h)	32.000	34.200	35.800
Min. input capacity for hot water (Btu/h)	33.000	33.500	33.500
Min. output capacity for hot water (Btu/h)	27.600	27.600	27.600
AFUE (%)	90	90	93,3
Working pressure of heating system	7~43	7~43	7~43
Max. heating water temperature (Fº)	194	194	194
Adjustment range of heating water temperature (Fº)	86~176	86~176	86~176
Rated electric power (W)	125	125	125
Electrical protection (IP)	X4D	X4D	X4D
Expansion tank volume (L)	6	6	8
Expansion tank prelead (PSI)	14,5	14,5	14,5
Heating area (square Ft^2)	500~1650	650~2200	850~2700
Power supply	110V/60Hz	110V/60Hz	110V/60Hz
Reference Natural Gas (12T) consumption (gom)	4~8.5	5.4~11.4	6.3~13.3
Lpg (20Y) (Lb/h)	1.65~3.45	2.2~4.6	2.55~5.4
Net weight (Lb)	80	83	88
TOTAL LENGTH OF THE LOOP CIRCUIT FT	230	230	230
PHISICAL SIZE	29X18X10	29X18X10	29X18X13
BURNERS (# ORIFICE)	9	12	14
PUMP MAX HEAT FT	16	16	19
CONNECTION PIPE BOILER	3/4	3/4	3/4
CONNECTION GAS	3/4	3/4	3/4

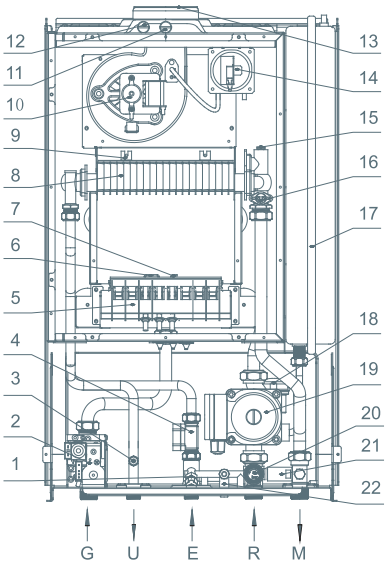
DOMESTIC HOT WATER SYSTEM

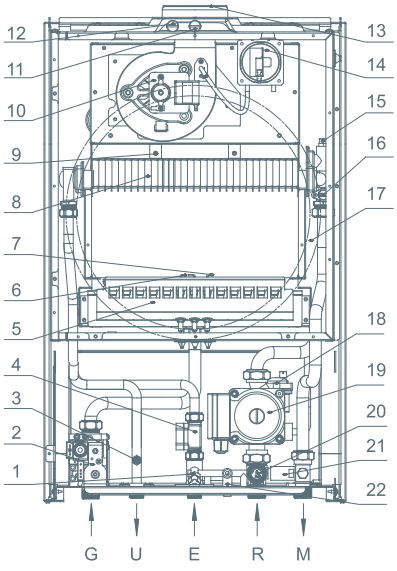
Model	MGBWA070	MGBWA090	MGBWA0100
Max. working pressure (PSI)	100	100	100
Min. working pressure (PSI)	7,25	7,25	7,25
Hot water capacity with ∆ t=45 F (Lb/min)	23	30	35
Hot water temperature adjustment range (±3 Fº) (Fº)	86~140	86~140	86~140
Min. hot water flow for starting (Lb/min)	5,5	5,5	5,5
Limited flow (Lb/min)	22	22	22
Natural gas (PSI)	0,3	0,3	0,3
LPG (PSI)	0,4	0,4	0,4
Artificial Coal Gas (PSI)	0,15	0,15	0,15
CONNECTION PIPE DOMESTIC HOT WATER	1/2	1/2	1/2

Model	MGBWA070	MGBWA090	MGBWA0100
Max. working pressure (PSI)	100	100	100
Min. working pressure (PSI)	7,25	7,25	7,25
Hot water capacity with ∆ t=45 F (Lb/min)	23	30	35
Hot water temperature adjustment range (±3 Fº) (Fº)	86~140	86~140	86~140
Min. hot water flow for starting (Lb/min)	5,5	5 1/2	5 1/2
Limited flow (Lb/min)	22	22	22
Natural gas (PSI)	0,3	0,3	0,3
LPG (PSI)	0,4	0,4	0,4
Artificial Coal Gas (PSI)	0,15	0,15	0,15

Inside Structure of Boiler

Gas Boiler Inside Structure

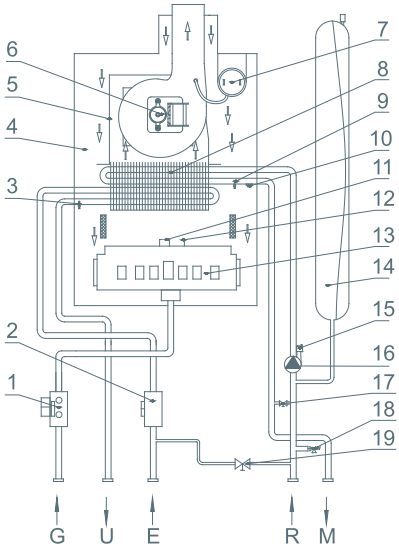




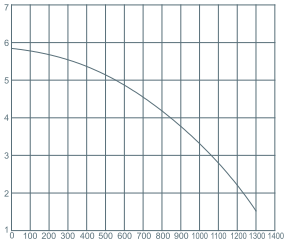
1. Cold water inlet
2. Gas valve
3. Hot water temperature sensor
4. Water button
5. Burner
6. Electrode for ignition
7. Electrode for flame detection
8. Heat Exchanger
9. Distributor
10. Fan
11. Smoke sampling
12. Air sampling
13. Flow limited loop
14. Valve of air pressure difference
15. Heating water temperature sensor
16. Limited temperature sensor
17. Expansion tank
18. Automatic air venting valve
19. Pump
20. Safe valve
21. Automatic bypass-valve
22. Water venting valve

G . Gas inlet
U. Hot water inlet
E. Cold water inlet
R. Heating water inlet
M. Heating water outlet

Gas boiler system priciple and chart of pump



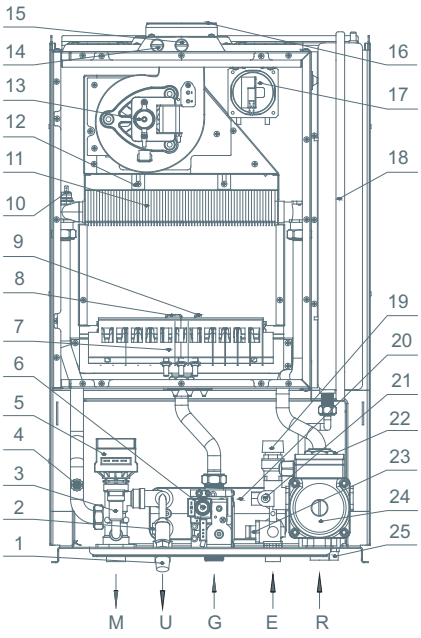
1、Gas valve
2、Water button
3、Hot water temperature
4、Sealed box
5、Burner room
6、Fan
7、Valve of air pressure difference
8、Heat exchanger
9、Heating water temperature sensor
10、Limited temperature sensor
11、Electrode for ignition
12、Electrode for flame detection
13、Burner
14、Expansion tank
15、Automatic air venting valve
16、Pump
17、Automatic bypass-valve
18、Safe valve
19、Cold water inlet

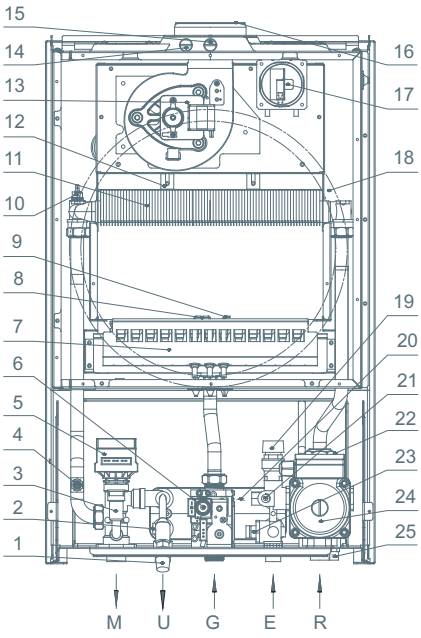


G、Gas inlet
U、Hot water inlet
E、Cold water inlet
R、Heating water inlet
M、Heating water outlet

Inside Structure of Boiler

Gas Boiler Inside Structure

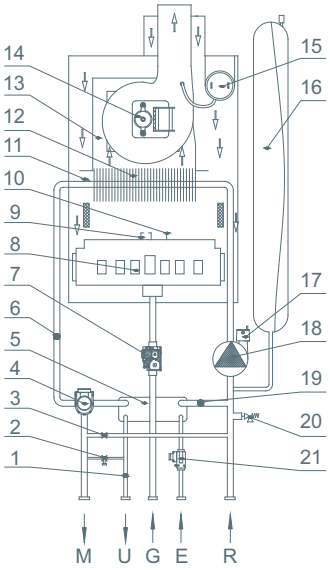




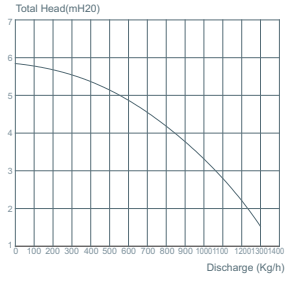
1.Cold water inlet
2. Hot water temperature sensor
3. Automatic bypass-valve
4. Heating water temperature sensor
5. electromagnetism three way valve
6. Gas valve
7. Burner
8. Electrode for ignition
9. Electrode for flame detection
10. Limited temperature sensor
11. Heat Exchanger
12. Distributor
13. Fan
14. Smoke sampling
15. Air sampling
16. Flow limited loop
17. Valve of air pressure difference
18. Expansion tank
19. Safe valve
20. Plate heat exchanger
21. Water pressure switch
22. Automatic air venting valve
23. Water button
24. Pump
25. Water venting valve

G . Gas inlet
U. Hot water inlet
E. Cold water inlet
R. Heating water inlet
M. Heating water outlet

Gas boiler system priciple and chart of pump



1、Hot water temperature
2、Cold water inlet
3、Automatic bypass-valve
4、Electromagnetism three way valve
5、Plate heat exchanger
6、Heating water temperature sensor
7、Gas valve
8、Burner room
9、Electrode for ignition
10、Electrode for flame detection
11、Limited temperature sensor
12、Heat exchanger
13、Burner room
14、Fan
15、Valve of air pressure difference
16、Expansion tank
17、Automatic air venting valve
18、Pump
19、Water pressure switch
20、Safe valve
21、Water button



G、Gas inlet
U、Hot water inlet
E、Cold water inlet
R、Heating water inlet
M、Heating water outlet

Saftey and caution instruction

Warning

- I Water stored in the boiler cannot be used for drinking or cooking, Just for daily use.
- Gas type must be in conformity to type on the tag.
- Please use the AC 110V/60Hz with supplied plug.To keep safety, the boiler should have earth connection.
- Have the boiler serviced by a qualified authorized service technician.
- Please keep ventilation at times when the boiler works.
- Switch off the power and gas valve when the boiler in malfunction, check the manual instructions or inform the professional engineer for repairing.
- Check the water pressure meter frequently when the pressure is too low.the boiler may stop working and show malfunction code on screen.Refill water and keep the pressure between 0.1— 0.12Mpa(1— 2 bar).
- To avoid freezing in cold weather, keep switch on and gas supply going.
- Turn off the electric power and cut off gas supply when you don't use for a long time.Drain water out of the boiler completely to avoid damage of freezing.
- The boiler should be connected with the heating system including a gas pipeline and an outlet.
- Boiler and burnet must be installed and serviced only by qualified heating installer/service technician. Failure to comply with the manual could result in severe personal injury or property damage.
- The safety equipment and the automatic regulating devices of the boiler are forbidden to be changed on your own.

Safty instruction

- Do not install the boiler outside the house.
- Switch off the power and gas supply when cleaning the boiler.
- Keep the boiler away from combustible materials, esp. plastic materials.
- Do not block the vent outlet and inlet by using cotton or paper.
- If there is gas smell or combustion smell,please do not turn on the electronic devices,such as power switch,telephone.Follow the instructions below:
  - open the window
  - Switch off the gas supply
  - Notify the technician.
- Do not wet the electronic outlet and boiler. Children
- and disabled people should not be allowed to use the boiler
- Keep the packing material of boiler from children,which could be dangerous for children. Do
- not pull, cut or curve the power cord.

Affusion, Water Filling and Drainage

Affusion

- Before affusion, turn on the automatic air vent valve on the circulation pump and the air-vent valve at the end of the heating system.
- Fill softened water into the preset position for affusion on the pipe of heating system.Observe the pressure meter on the operation panel,stop filling in water when the pressure reaches between 0.1-.12Mpa(1—1.12 bar)
- Turn on the boiler (do not turn on the gas valve),then the pump start working.when the pressure drops to 1 bar, turn off the boiler.
- Keep on filling softened water in until the meter hands points to 0.1-0.12(1-1.2 bar). Restart the boiler(do not open the gas valve),the pump will start running.when the pressure drops again, Repeat the above steps until the pressure keeps steadily at 0.1—0.12 Mpa(1—1.2 bar).
- Turn off the air vent valve on the end of the heating system.

Caution:As the air cannot be exhaused from the boiler completely at first affusion.the remaining air may go with steam into the water pressure detection system,which may result in the lace-water-protection system running-Refill the water until the pressure reaches to 0.1 -0.12Mpa(1 -1.2 bar).Turn the "reset " button,restart until the system operate steadily.

Refilling the water

The boiler is equipped with a manual valve for affusion and refilling water.Add water when the water pressure is below 0.1Mpa(1 bar) during the operation.

- Switch off the power supply of the boiler.
- Check to make sure there is no water leakage from the heating system.
- Turn the Affusion/refilling water valve in an anticlockwise direction.
- Observe the water pressure metre, till water pressure reaches 0.1-0.12Mpa(1—1.2 bar),turn the affusion/refilling in a clockwise direcition,and close the valve.
- Restart the boiler.

Recovery of the Heating Sytem

- Check the heating system pressure regularly.The boiler pressure metre hand should be pointed at the 1-1.2 bar. If the pressure is less than 1 bar(cold boiler),refilling the water by affusion valve on the bottom of the boiler.

Caution

Turn off the refilling valve after the Refilling finished,If the pressure of the heating system goes up to 3 bar,the safety valve will be opened.Please contact the technician.

Operating

Anti-freeze pretection

- You should keep all the parts of the boiler running and the power supply on Sumer/winter button.When the water temperature is below 8 centigrade,the burner and pump will start until the temperature rises to 30 centigrade.To avoid the boiler keep running around the clock, or laying idle,please exhaust the air or add anti-freezing. Exhaust the water in the pipeline of heating system.Refilling water disposed,which can reduce the water hardness and avoid the sediment incrustration.

Clean the shell

- Use web and neutral soap to clean the boiler shell. Never use abrasive detergent and putty-powder.

Start the gas boiler(Check)

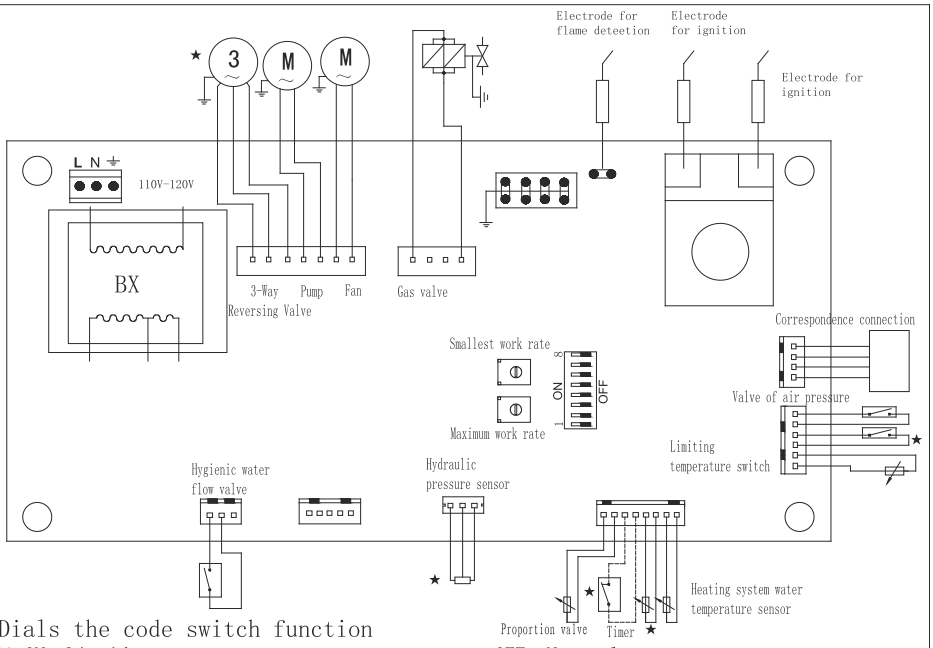
Please follow the below instruction

- Check the air-tightness.First check the air-tightness when the gas valve is closed,then open it, here should no gas through on the timer display within 10 minutes
- Check if the gas type is in accordance with the required ones.
- Check the connecting,L-N polarity and grounding when connected to the 110V/60Hz power supply.
- Ignite the gas and check the ignition.
- Check the dates of Max. Gas flow,medium Gas flow and Min. Gas flow and relative air pressure to see if it's accordance with listed dates.
- Check the intervening progress and intervening time of safety equipment when there is no gas supply.
- Check the switches in and outside or control display.
- Check if there is any jam in the air inlet and outlet.
- Seal the adjustment equipment of gas valve(when the adjustment is finished).
- Check the water flow of domestic hot water.
- Check the airproof of all water pipe.
- Check the ventilation of the installation place to make sure it can satify the requirement.

Caution:

You can only use the boiler when the check is accomplished, f any of the item above cannot be matched,please call the technician.

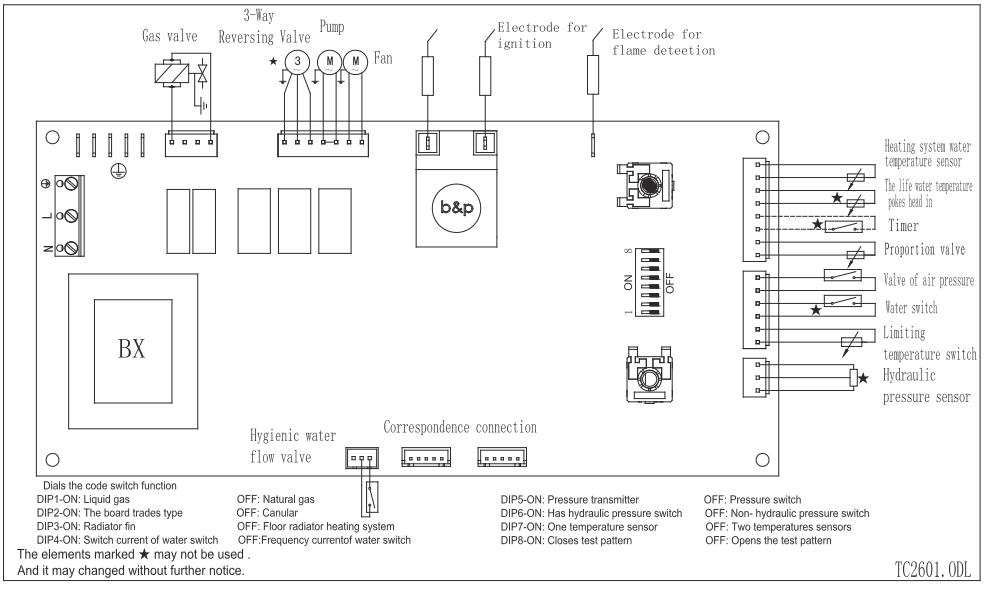
Circuit Diagram of Boiler



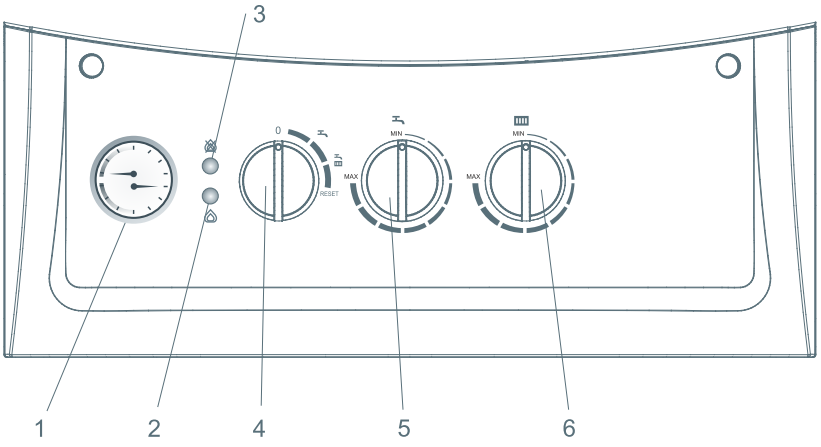
Dials the code switch function

DIP1-ON: Liquid gas — OFF: Natural gas
DIP2-ON: The board trades type — OFF: Canular
DIP3-ON: Radiator fin — OFF: Floor radiator heating system
DIP4-ON: Switch current of water switch — OFF:Frequency currentof water switch
DIP5-ON: Pressure transmitter — OFF: Pressure switch
DIP6-ON: Has hydraulic pressure switch — OFF: Non- hydraulic pressure switch
DIP7-ON: One temperature sensor — OFF: Two temperatures sensors
DIP8-ON: Closes test pattern — OFF: Opens the test pattern

The elements marked ★ may not be used .
And it may changed without further notice.



Operation panel



1. Water pressure meter	display the pressure of heating system
2. Yellow indicator	On when operate normally
3. Red indicator	On when the Malfunction happens
4. Function switch	On/Off Summer/Winter
5. DHW knob	Adjust the DHW
6. Temperature adjustment	knob Adjust the water temperature in heating

Ignition of boiler

- Open the gas valve.
- Turn the knob (4), to the Summer( ) mode (as figure 1), when in need of DHW, the fan motor and circulation pump start, the burner ignites then the flame indicator (yellow) on, knob (5) adjust the temperature of domestic hot water.
- Turn the knob (4), put it in the Winter( ) mode(figure 2),.when in need of heating, the fan motor, circulation pump, burner starts, the flame indicator (Yellow) , turn the knob (6) to adjust the temperature in the heating system.
- Turn the knob in the clockwise, the temperature will rise, in the anti–clockwise, the temperature will fall.

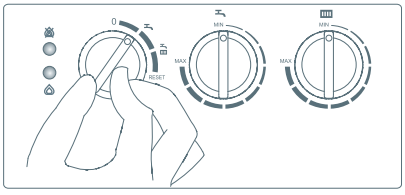


figure 1

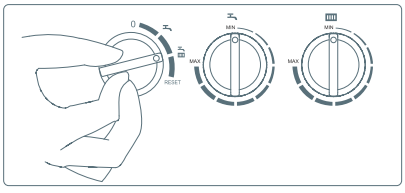
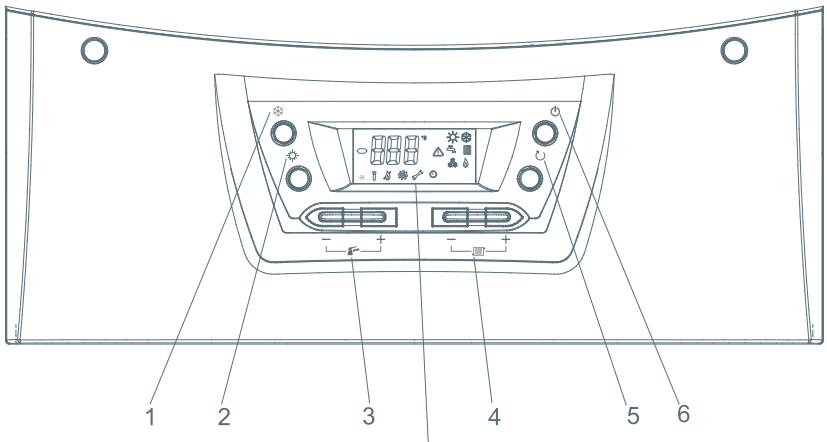
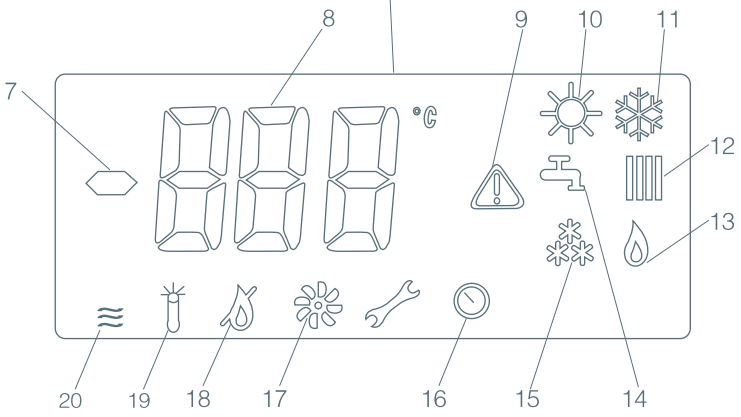


figure 2

Operation panel





1. Winter button
2. Summar button
3. DHW temperature up/down button
4. CH temperature up/down button
5. Reset button
6. Power on/off
7. Cold indication
8. Temperature display and malfunction code display
9. Over-heat problem display
10. Summar
11. Winter
12. Heating mode
13. Normal flame indication
14. DHW mode
15. Antifreezing
★16. System water pressure indicator
17. Fan motor/fan pressure on/off malfunction
18. Ignition failure
19. Temperature sensor malfunction
★20. Short of system water pressure

Remark: The item with maks "★" maybe can't available.

Ignition of the boiler

■ Before the ignition,please check wheter the water in the equipment is full or not,and check.whether the pressure gauge finger points to the position between 1 bar and 1.2 bar.

- Open the gas valve of the boiler.
- Press button (1) or (2),and set the boiler to summar(❄) or winter (☼).

Note：After each change,please loosen the button,and change to the next function.

- When s etting the summer mode,the temperature of DHW is adjusted by button (☼) when setting winter mode,the temperature of CH is adjusted by button(4)and the DHW is still adjusted by button(3).Press (+),the temperature increases,and press(–),the temperature decreases.

Note：The temperature of water for DHW is decided by the water flow and temperature of the water in,so the temperature of water out may change a little compared with the set temperature,From this time on,the boiler will operate automatically,when no need for heating,the boiler comes into waiting station,That's to say,with power on ,but no flame.

Malfunction Display and Solutions

Ignition failure

- When turn the knob 5, the boiler doesn't ignite in 10 seconds, the red indicator 3 lights.
- Check the gas valve is opened or not, press the RESET knob to restart the boiler to ignite once more, if the boiler still doesn't start up, turn off the boiler and ask for technician.

Over heating-The red indicator 3 lights

- When the input/output power is normal, the temperature is too high the boiler will show the overheating malfunction.
- The causations are as follow:
  - Water lackage in heating system. Check the pressure is during the 1-1.2bar or not.
  - The circulation in the heating system is not so smoothly, check the pipeline in the sealed heating system and air vent works or not.
  - To restart the boiler, please turn the knob 4 to the RESET If this malfunction happened continully, turn off the boiler and ask for technician.
- Air pressure sensor malfunction—red indicator 3 lights and the yellow indicator 2 lights
- In this situation, check the air inlet pipe, the exhaust gas pipe and the fan. If necessary, turn off the boiler and ask for technician.

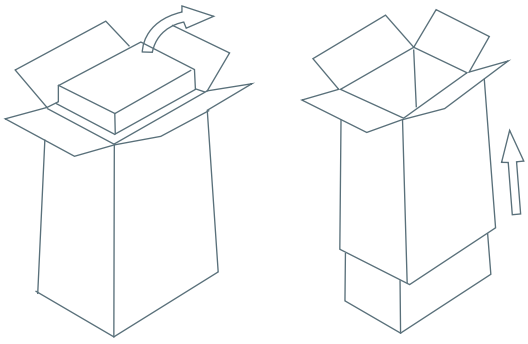
Malfunction Display and Causation

- CdUtion: Maintenance should be taken by technician.
- Gas smell. The gas has leaked, so the pipe should be checked if sealed.
- When the fan is operationg, the flame can't cover the burner. Maybe the fan has started, but the point of the air pressure sensor hasn't changed. It need examination.
- The inlet-exhaust gas pipe is too long that has exceed the size permision;
- The inlet-exhaust gas pipe is blocked.(Maybe the part of the inlet pipe and the part of the exhaust pipe.)
- The isolation ring is not fitted to the inlet-exhaust gas pipe;
- The sealed box is not sealed well.
- The power of the fan is lower than 196V.
- The burning is abnormal that the flame is red or yellow. The causation are as follows. The burner is too dirty. The wrong tie-in terminal..
- Over temperature and the pressure meter shows frequently boiler malfunction.This is caused by the lack of system water, the abnormal heating system water circulation and the block in the circulation system. Check the pressure meter to ensure the pressure is under 1-1.2bar. Be sure that the valve of the heating system are all closed and the operation of the circulation system is normal.
- The air is not emptied in the system. Check the safe valve to be opened, the pressure of the boiler and the expansion vessel at the ranged pressure. The pressure of the expansion vessel should be at LObar, the pressure of the boiler should be at 1-1.2bar.
- The circulation pump maybe blocked because it is not used for a long time. Please disassemble the front of the pump, running the motor base by screwdrive. Do this carefully.

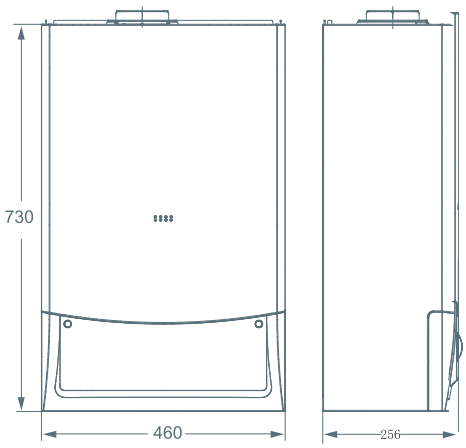
Unpacking

The boiler is packed with cardboard box and should be unpacked in the following steps.

- Put the long side of boiler's package on the ground as shown in the diagram on the right.
- Tear off the adhesive tapes.
- Unpack the cardboard box as shown in the diagram on the right.



Dimension



Model		MGBWA100N11LA
L	mm	322
W	mm	460
H	mm	730
N.W.	Kg	42

Inspection and Acceptance

The following major accessories are provided together with the boiler:

- Instructions Manual for Operation and Installation
- Qualified Inspection
- Hanging board and screws
- Connection components and washers for water system
- Module plate for installation of flue gas tube

Please refer to the Packing List for more details.

The Instruction Manual for Operation and Installation is fundamental and important for installation and manipulation. Please read it carefully and keep it intact.

Requirement for indoor Environment

- The boiler must be installed in a room where it is easy and convenient to exhaust flue gas and suck in fresh air from outside.
- The boiler shall bot be installed in the following places:
  - outdoor
  - bedroom, living room and basement
  - closet

For Installation

Installation with Old and/or Renewable Systems

- The circulation pump head and flow should match the boiler system
- The whole system should be clean,with no sediment, rust, leakage, and drip-drop.
- While affusing and refilling water. a water-purification must be equipped.

The manufacturer is not responsible for the damages caused by improper installation of the air-venting devices of the system.

Requirements for Suitable Water	
PH value	6~8
Electric conductivity	<200
SO_4^{2-}	<50ppm
Cl^-	<50ppm
Total content of iron(Fe)	<50ppm
Total hardness	<35
Content of alkali	<0.3ppm
S^{2-}	Nil
NH_4^+	Nil
Si^{2+}	<20ppm

Installation with Old and/or Renewable Systems

- Don't install the boiler to the place close to any combustible material.
- The wall on which the boiler is installed must be able to support a hang weight of 45KG,and if it's made of combustive materials,it should be covered with anti-combustive at least 3 mm thick.
- Never install the boiler in places where combustion and volatile drugs are stored or used.
- Don't install the boiler under any dangerous shelf staff that maybe drop.
- Don't install the boiler above other gas applications.
- The outlet of the flue gas pipe shall be installed at places with good ventilation.
- For natural gas and LPG users, D15 gas pipe can be used. However we advise you use D20 pipe,the reducer pipe connecting with the gas meter should less than D15.
- Keep a stable voltage of 110V,Use constant voltage regulator.
- It is forbidden to use hemp thread for connecting pipe. Use coarse plastic tapes. If hemp thread has to be used in certain conditions,please completely clean the pipes with compressed air at 8 bar pressure.
- Radiator of 150 square meter might be installed in your room—you have to install the Y-shape filter in the return water of heating system.
- The outlet of safety valve must be connected to floor drainage, there shall not be any valve on connection pipe.
- For system with cast iron radiators,please completely clean the pipes and radiators with high-pressure water or compressed air at 8 bar pressure.In areas where water quality is poor,please clean the system several times. Use softened water for affusion of system.

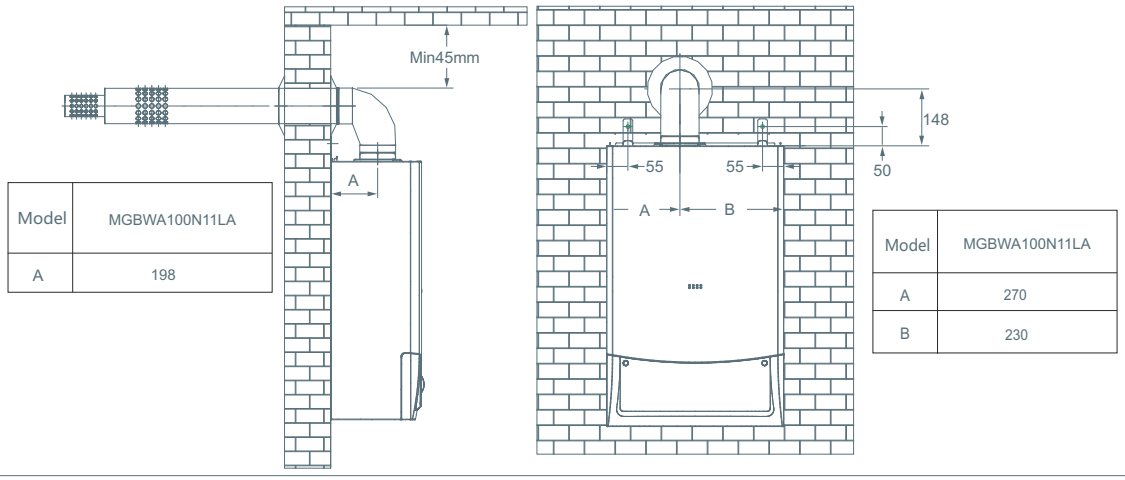
For Installation

Fix the hanging board for installation

- Adjust the hanging board with a gradienter
- Add washer if necessary.
- Mark the fixing points.
- Take off the hanging board and drill holes on the wall
- Fix the hanging board on the wall with screws
- Adjust it level with a gradienter

MGBWA100N11LA

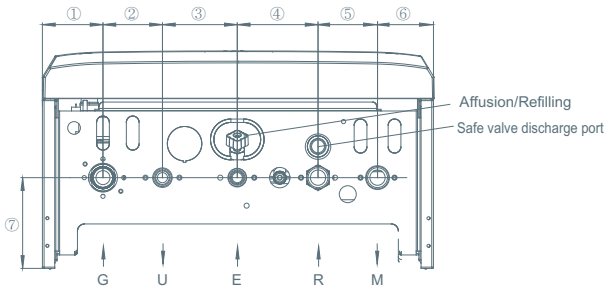
Attention: The min. space should be allowed for the maintenance purpose, as shown on the right picture.



Model	MGBWA100N11LA
A	198

Model	MGBWA100N11LA
A	270
B	230

The Connection of water system



MODEL	MGBWA100N11LA
①	71
②	70
③	88
④	95
⑤	70
⑥	66
⑦	173

G:Gas U:Domestic hot water E:Domestic cold water R:Heating backwater M: Heating hot water

Installation of Gas Pipe And Coaxial Flue Gas pipe

Connection of Gas Pipe

Before connecting gas pipes, please check:

- Whether the type of gas supplied matches that specified on the name plate of boiler. Any other types of gas not specified on the name plate shall not be used.
- Whether the gas pipes are clean.
- Please install a gas filter if there are solid particles in gas. Please check the tightness of all connections after installation.
- Do not use the gas pipe as the earth wire.
- There must be a pipe, which connects outlet of safety valve to the ground.

Installation of Flue Gas Pipe

Notice:

- Please use the supplied flue gas pipe.Do not modify the flue gas pipe.
- The flue gas pipe shall be installed with a 2-degree slope outward to ensure the condensation water flows out.
- The flue gas pipe must be wrapped with refractory material thicker than 200mm when it goes through a wall with combustive materials. Do not lay the
- pipe into ceiling.If you have to do this,cover the flue gas pipe with refractory material thicker than 20mm.
- The space between the flue gas pipe and the wall it goes through shall not be filled with hard articles such as cement.which makes it inconvenient for maintenance.
- The outlet and inlet of flue gas pipe shall be extended to the outside wall,and shall not be blocked.Keep the ventilation of exhaust and air-entering.
- The distance between the upper edge of the flue gas pipe and the above building shall be more than 45mm.
- If extended pipe are used,all the joints must be well sealed and there shall be no leakage of flue gas into house.

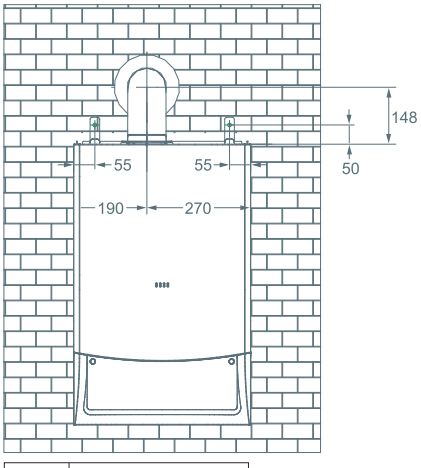
Coaxial Flue Gas Pipe

The coaxial flue gas may be adjusted to the most suitable direction according the requirement of installation. The chart below show the linear lenghts of flue gas pipe with and without flow-limiting ring. The flow limiting ring shall be removed with a screw driver.

Linear Length (mm)	Flow-limiting ring	Equal linere length of 90-degree elbow
Less than 1m	With	0.85
1~4.25	Without	

Installation of coaxial flue gas pipe

- Drill a hole of 105mm on the wall according to the installation module.The whole shall have a downward of 2 degree toward outside.
- If the flue gas pipe is installed in the side wall,draw a horizontal line from the centre of the module to the centre of the outlet flue gas pipe.
- Draw a circle of 105mm centering the centre of the outlet of the flue gas pipe.
- Drill according to the circle drawn above.

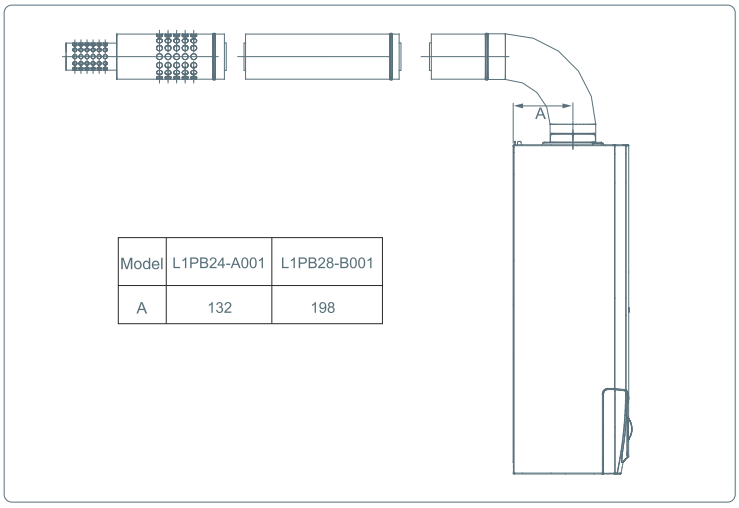


model	MGBWA100N11LA
A	270
B	230

Connection of extended flue gas pipes

The whole length of flue gas pipe is decided by the the distance between the boiler mouted place and the position outlet of flue gas pipe. The distance also decide whether the flow limited loop shall be removed and whether the extended pipes shall be used.Please refer to the diagram below

- Extend the standard gas flue pipe outward through the hole in the wall
- Install the flanges of flue gas pipe
- Install the elbow union at the outlet of the flue gas pipe and inlet of boiler
- Connect the extended flue gas pipes with the elbow and the standard pipe



Model	L1PB24-A001	L1PB28-B001
A	132	198

Cautions for installtion of flue gas pipe

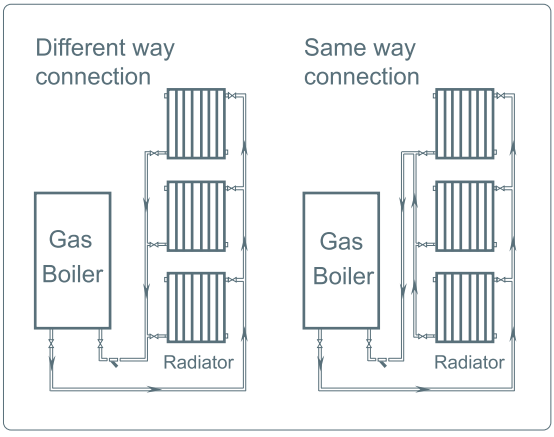
- Pay attention to the air tightness of the flue gas pipes.While installing the elbow union,please make sure that its inner pipe is correctly jointed with flue gas exhaust pipe on the boiler and all pipes are firmly connected with the boiler.There must be no less than 30mm between the elbow and the standard pipe and betweent the two extended pipes,to assure the airtightness of the wholepipe.
- The connection of flue gas pipe includes standard connection and extended connection.In either way only one standard pipe is used.The numbers of elbows and extended pipes are not allowed to exceed the length of line.

Heating System

The heating system can be divided into several forms-based on the outside heating equipment(the following system are for reference):

Radiator heating system

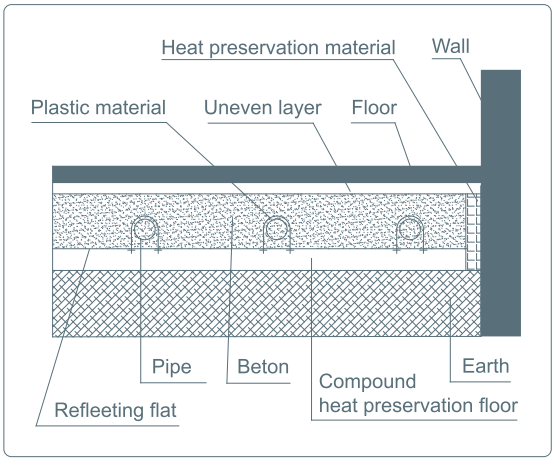
- Radiator heating system is the most common way. The connection sketch is as picture 3.1.Because the circulation pump head is limited,you have to consider decreasing the pressure of system when using heating system.
- Cautions:
  - Choose the right type and collocation rate by calculating the needed heat load of the room
  - Choose the installation place and collocation way correctly
  - Better not use heating system in series
  - Better not use cast iron radiator if the room space is over 120 square meters.



Floor radiator heating system

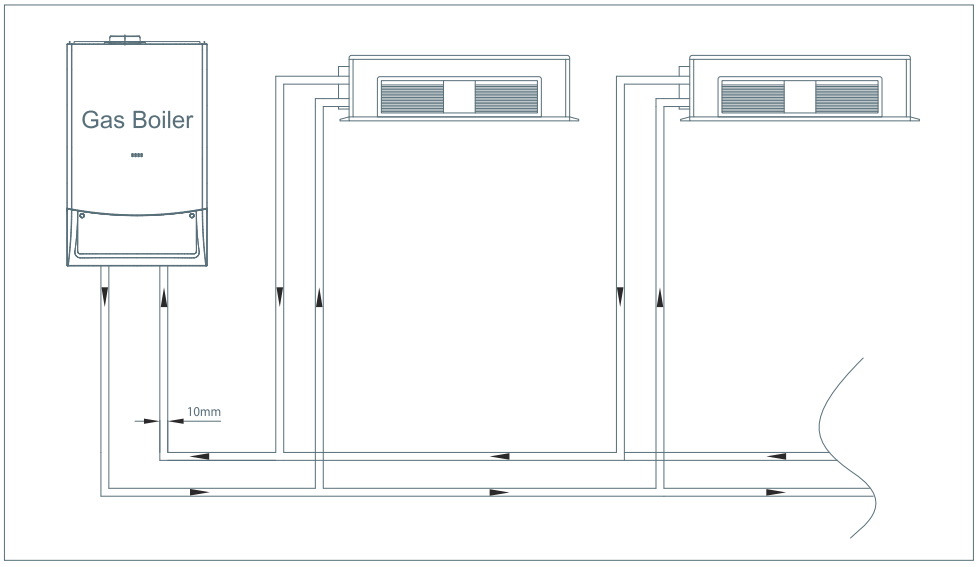
With precise design,Floor radiate heating is running through the following way:lay hot water pipe with low termperature under the ground..Use the heat radiate from the hot water with low temperature and the filled rock concrete to collect heat.First,heat all the ground evenly,then transfer the heat towards the floor,to heat the room as a result.The way springs up just several years,and it's good in light of the financial and comfort..As the picture 3.2.

- *Attentions:*
  - The temperature of the heat transfer medium cannot exceed 60 centigrade.
  - The total length of the loop circuit cannot exceed 70m,and pipe center to center distance is between 120-200 mm.
  - Water separator and water trap should be equipped to adjust.
  - There should be no connector for the laid pipe.
- Features of the ground heating system
  - Fit for human physiology, more comfortable,low temperature transfer, radiation heating.
  - High efficiency,take up less space.
  - Long life performance, with safety, hard to leak.
  - Stable heating
  - Easy to control, separately supply heat for each room



Fan coil heating system

For the user who has the central air conditioner system,they can make full use of the fan coil of the air conditioner to heat the room,so you do not need to use another system.You can reduce the investment and heat in the winter and cooling at summer.



Attentions:

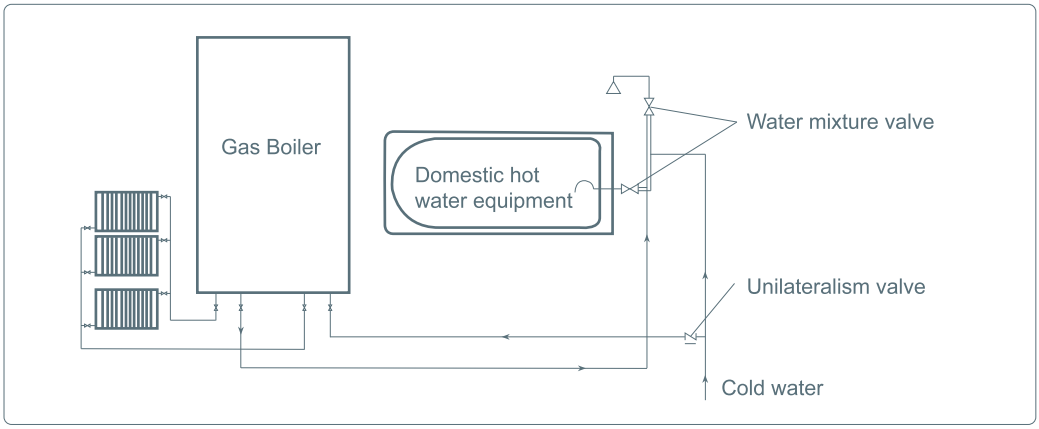
- When heating system uses the pump of the central air condition,please pay attention to the working principles of the boiler, and improve the part circuit of the central air conditioning control the pump.
- Pay attention to the reasonable water trait of the whole system.

Domestic Hot water system

- Hot water system is to meet the demand of domestic hot water,say the bath.It's composed of boiler,pipe,sanitary equipment(The following systems are for reference)
- Generally,there are two systems based on the different equipments and theory:Without water tank simple system and with water tank system.

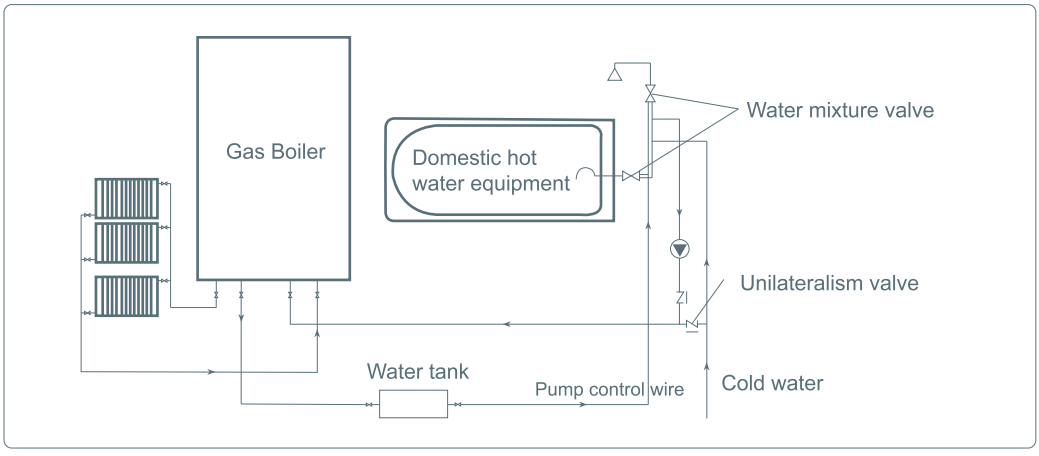
1. without water tank system

- The system is composed of boiler,sanitary hot water equipment and pipe.The boiler is connected with sanitary equipment by pipe.As the picture 3.4
- When turning on the hot water tap,the water goes through the boiler,the sanitary hot water function works,and heats the water that goes through the boiler.Now you have to drain the cold water out,then it comes out the hot water.
- The system is suit for the equipment that the hot water pipe is not too long,(the boiler is close to the equipment where hot water is used).The system is easy to install,less investment,and can supply water for 2-3 places.



2. With water tank system

- The system consists of boiler, circulation pump,water tank,pipe,sanitary hot water equipment which connected together.
- The working principle is :when in need of hot water,the water goes through the pipe,the flow switch sensor works,and starts the sanitary hot water function to supply the hot water for the user.



- The water tank is equipped with a temperature sensor,which can watch the temperature inside of the tank.When the temperature is below the set temperature,the sensor send the information to the pump which begins to work,then the water in the tube flows,so the heating function of the boiler starts,When the temperature in the tank reaches the set temperature,the termperature sensor give the signal to the pump,which will stop working.The stable water temperature can be kept and ensure the realtime supply of hot water.
- The system has hot water circulation pump in addion,esp.for the system with a long pipe.It can supply hot water immediately .In addition,we have a water tank,which can supply 3-5 places with stable temperature hot water much more comfortable.

  Attention: The system must equip the pump.

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